

FIG. 1
CONVENTIONAL ART

16 LEVEL($2^4=4$ bits) QUANTIZATION OF UNIFORM QUANTIZATION

BINARY NOTATION OF QUANTUM VALVE	QUANTUM VALVE	QUANTIZATION SECTION
0000	0	0.0000 ~ 0.0624
0001	1/15=0.0667	0.0625 ~ 0.1249
0010	2/15	0.1250 ~ 0.1874
0011	3/15	0.1875 ~ 0.2499
0100	4/15	0.2500 ~ 0.3124
0101	5/15	0.3125 ~ 0.3749
0110	6/15	0.3750 ~ 0.4374
0111	7/15	0.4375 ~ 0.4999
1000	8/15	0.5000 ~ 0.5624
1001	9/15	0.5625 ~ 0.6249
1010	10/15	0.6250 ~ 0.6874
1011	11/15	0.6875 ~ 0.7499
1100	12/15	0.7500 ~ 0.8124
1101	13/15	0.8125 ~ 0.8749
1110	14/15	0.8750 ~ 0.9374
1111	1	0.9375 ~ 1.0000

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FIG. 2

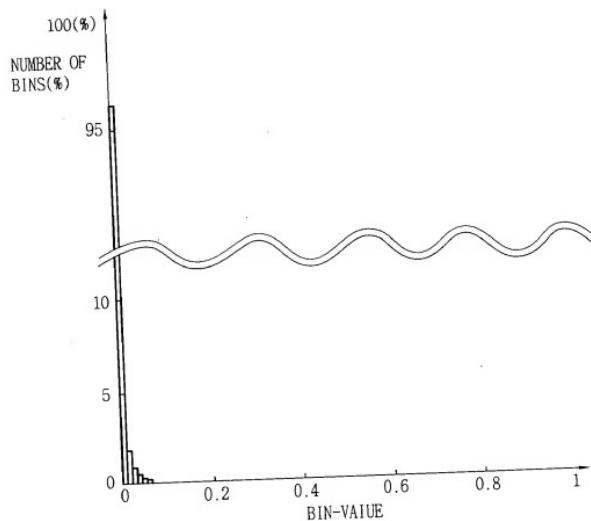


FIG. 3

16 LEVEL($2^4=4$ bits) QUANTIZATION OF UNIFORM QUANTIZATION

BINARY NOTATION OF QUANTUM VALVE	QUANTUM VALVE	QUANTIZATION SECTION
0000	0	0
0001	1/15=0.0667	0.0001 ~ 0.0071
0010	2/15	0.0072 ~ 0.0142
0011	3/15	0.0144 ~ 0.0214
0100	4/15	0.0215 ~ 0.0285
0101	5/15	0.0286 ~ 0.0356
0110	6/15	0.0357 ~ 0.0428
0111	7/15	0.0429 ~ 0.0499
1000	8/15	0.0500 ~ 0.0570
1001	9/15	0.0571 ~ 0.0642
1010	10/15	0.0643 ~ 0.0713
1011	11/15	0.0714 ~ 0.0784
1100	12/15	0.0785 ~ 0.0855
1101	13/15	0.0856 ~ 0.0927
1110	14/15	0.0928 ~ 0.0999
1111	1	0.1000 ~ 1.0000

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